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## 2020 MICHIGAN DRY BEAN PERFORMANCE TRIALS

*Scott Bales, MSU Dry Bean Specialist*

### Introduction

148 lines from 10 separate market classes were tested across 5 locations (Table 1) in 2020. In each result table you will find information on agronomics such as flowering date, plant maturity, height, and disease tolerance. Flowering and plant maturity are rated visually in days after planting (DAP) across all locations. In 2020 plant height and lodging were recorded at the Bay and Tuscola County locations due

to adequate plant growth. Lodging is evaluated on a scale of 1-5. A 1 indicates that the entry was completely erect in the field at harvest; inversely, a 5 indicated that the entry was flat on the ground with stems and pods touching the soils surface. White mold infection was recorded in Tuscola County by calculating percent infection on each replication ( $((\text{number infected} / \text{total stand}) * 100)$ ).

Yield results are presented in pounds per acre (lb. A-1) adjusted to 18% moisture for all locations. Small and medium seeded beans were tested in Bay, Huron, Sanilac, and Tuscola County. Large seeded beans were tested in Montcalm and Tuscola County. Following individual location results, yield is presented combined over locations for 2020 unless production systems differ (irrigated vs. dry land), this represents a 1 -year average across all locations. When possible this is also done for 2- and 3- year averages across locations and years. For example, a 3-year average of navy bean yield results includes data from 2018, 2019, and 2020 at 4 locations per year (12 site years).

At the bottom of most columns you will find the trial average (mean), least significant difference (LSD) and coefficient of variation (CV) for the data within that column. To assist in the evaluation of these results the entry with the highest numerical yield in each column (trial and year) is followed by two asterisk (\*\*). However, entries that are not significantly different from the highest yielding entry are followed by one asterisk(\*). This means that if an entry is followed by an asterisk (one or two) there is no evidence that the entries differed for that given trait.

### Methods

Dry beans were seeded in four row plots (20" rows) that measure 6.6' wide by 20' long. Each entry is replicated four times within the trial with one exception. Kidney, cranberry, and yellow beans planted in Tuscola County in 2020 had two replications. All trials were designed as randomized complete block (RCB). Trials received industry standard seed treatments, fertilization, and weed control applications at labeled rates. White mold fungicides are not applied to any location. The absence of fungicide allows the evaluation of a varieties natural tolerance or avoidance to white mold when the disease when present. Yield data is obtained by direct harvest for small and medium seeded beans. Large seeded beans are pulled by hand and then mechanically thrashed to prevent harvest loss. Following harvest samples are cleaned, weighed, and moisture tested. Questions regarding the 2020 variety trials, or suggestions for 2021 should be directed to **Scott Bales: (989)-262-8550 ext. 2; Balessco@msu.edu.**



**VIEW THE TRIAL TABLES INSIDE...**

**TABLE 1. TRIAL LOCATION, GROWER COOPERATOR, PLANTING DATE, NITROGEN APPLICATION METHOD AND TIMING, TOTAL ACCUMULATED GROWING DEGREE DAYS (GDD), AND TOTAL PRECIPITATION.**

| County   | Cooperator      | Planting Date | Nitrogen Application | Total GDD* | Total Precipitation (inches) |
|----------|-----------------|---------------|----------------------|------------|------------------------------|
| Bay      | Schindler Farms | 7-Jun         | 2x2                  | 2081       | 10.72                        |
| Sanilac  | Aldrich Farms   | 5-Jun         | PPI                  | 2127       | 10.89                        |
| Tuscola  | Bednarski Farms | 6-Jun         | 2x2                  | 2049       | 10.42                        |
| Montcalm | Jaquays Farms   | 15-Jun        | 2x2 + side-dress     | 1923       | 9.68 + irrigation            |
| Huron    | Pawlowski Farms | 5-Jun         | 2x2                  | 2158       | 16.71                        |

\*Weather data retrieved from the nearest Michigan Automated Weather Network (MAWN) and the Enviro-weather Program station nearest to the trial. All weather data is from the day of planting to October 1. Growing degree days were calculated using the following equation:  $((MAX + MIN)/2) - 50$

**TABLE 2. SOIL TEST INFORMATION FROM THE 5 COUNTY LOCATIONS INCLUDING ORGANIC MATTER (%OM), PH, AND CATION EXCHANGE CAPACITY (CEC). ALL MACRO AND MICRO NUTRIENTS WERE SUFFICIENT FOR DRY BEAN PRODUCTION.**

| Location | OM (%) | pH  | CEC  |
|----------|--------|-----|------|
| Tuscola  | 2.3    | 7.3 | 9.6  |
| Huron    | 3.0    | 7.4 | 10.8 |
| Sanilac  | 2.3    | 7.5 | 9.2  |
| Bay      | 2.2    | 6.8 | 10.5 |
| Montcalm | 1.1    | 5.8 | 4.3  |

| <b>TRIAL</b>                   | <b>TABLE</b> |
|--------------------------------|--------------|
| Navy beans .....               | 3            |
| Black beans .....              | 4            |
| Small Red and Pink beans ..... | 5            |
| Cranberry beans .....          | 6            |
| Light Red Kidney beans.....    | 7            |
| Dark Red Kidney beans.....     | 8            |
| White Kidney beans.....        | 9            |

*\*\*Highest yielding variety within column*

*\*Yield not statistically different than the highest yielding variety within column*



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**TABLE 3. NAVY BEAN AGRONOMIC AND YIELD RESULTS.**

| VARIETY                 | White Mold |           |              |           |           |                     |        |         |         |                     |             |             | Seed Size              |
|-------------------------|------------|-----------|--------------|-----------|-----------|---------------------|--------|---------|---------|---------------------|-------------|-------------|------------------------|
|                         | Maturity   | Flowering | Plant Height | Lodging   | Infection | Bay                 | Huron  | Sanilac | Tuscola | 1-year avg.         | 2-year avg. | 3-year avg. |                        |
|                         | — dap —    | — dap —   | — inch —     | — (1-5) — | — % —     | Lb. A <sup>-1</sup> |        |         |         | Lb. A <sup>-1</sup> |             |             | seeds Lb <sup>-1</sup> |
| Apex                    | 104        | 38        | 22.5         | 3.0       | 12.7      | 2691                | 3679*  | 2226*   | 2752    | 2934*               | 2849        | 2886        | 2028                   |
| Argosy                  | 100        | 44        | 22.5         | 2.8       | 8.4       | 2815                | 3066   | 1856    | 2880    | 2654                | 2745        | 2813        | 2241                   |
| Armada                  | 100        | 45        | 23.0         | 2.5       | 8.4       | 3147*               | 2957   | 2085    | 3257    | 2861                | 2838        | 2908        | 1925                   |
| Blizzard                | 98         | -         | 24.0         | 2.1       | 16.7      | 3646**              | 2942   | 2673*   | 3215    | 3119*               | 2922*       | 2848        | 2220                   |
| HMS Bounty              | 103        | -         | 24.0         | 2.6       | 2.2       | 3381*               | 3207   | 2643*   | 3425*   | 3179*               | 2929*       | 3125**      | 2387                   |
| HMS Medalist            | 101        | 45        | 23.0         | 2.3       | 19.9      | 3368*               | 3389*  | 2273*   | 3808**  | 3191*               | 2806        | 2740        | 2264                   |
| Indi                    | 95         | 43        | 23.5         | 2.0       | 4.3       | 2987                | 2517   | 1618    | 3006    | 2532                | 2488        | 2536        | 2278                   |
| Merlin                  | 103        | -         | 23.5         | 3.0       | 7.6       | 2894                | 3138   | 2346*   | 2340    | 2679                | 2497        | 2669        | 2193                   |
| Nautica                 | 103        | 38        | 21.0         | 3.1       | 13.4      | 3033*               | 3089   | 2153    | 2793    | 2751                | 2573        | 2514        | 2233                   |
| Shock                   | 98         | 44        | 22.0         | 2.7       | 14.5      | 3162*               | 2773   | 1639    | 3099    | 2668                | -           | -           | 2086                   |
| Valiant                 | 101        | 46        | 23.5         | 2.7       | 13.0      | 3056*               | 3990** | 2061    | 3135    | 2995*               | 2747        | -           | 2178                   |
| Vigilant                | 96         | 46        | 25.0         | 1.5       | 6.5       | 2502                | 3615*  | 1961    | 2963    | 2814                | 2680        | -           | 2378                   |
| 12039                   | 100        | 45        | 24.0         | 3.0       | 8.6       | 2517                | 3824*  | 2119    | 3362    | 2769                | 2942*       | -           | 2180                   |
| 14068                   | 101        | 45        | 25.0         | 2.9       | 16.3      | 3151*               | 3624*  | 2060    | 3295    | 3285*               | 2913*       | 2885        | 2241                   |
| 14080                   | 102        | 45        | 22.5         | 2.9       | 6.9       | 2258                | 3091   | 2416*   | 2800    | 2605                | 2685        | -           | 2207                   |
| 14084                   | 102        | 47        | 24.0         | 2.1       | 13.7      | 3453*               | 3666*  | 2281*   | 3456*   | 3214*               | 2879        | 2903        | 2392                   |
| 14089                   | 101        | 47        | 22.0         | 2.5       | 7.2       | 3175*               | 2477   | 2060    | 3020    | 2686                | -           | -           | 2270                   |
| 15094                   | 100        | 45        | 23.5         | 2.5       | 21.0      | 3492*               | 3442*  | 2227*   | 3423*   | 3146*               | 2987        | 3016*       | 2126                   |
| 15095                   | 104        | 46        | 21.5         | 2.9       | 14.8      | 3605*               | 3530*  | 2781**  | 3308    | 3306**              | 3152**      | 3097*       | 2344                   |
| EX1702                  | 100        | 46        | 22.0         | 3.1       | 10.9      | 2183                | 2753   | 2179    | 2880    | 2499                | 2376        | 2600        | 2207                   |
| EX1708                  | 102        | -         | 23.0         | 2.8       | 18.8      | 3175*               | 2569   | 1751    | 3121    | 2712                | 2367        | -           | 2489                   |
| EX1711                  | 100        | -         | 23.0         | 3.0       | 13.7      | 2876                | 2537   | 2217    | 2742    | 2593                | 2439        | -           | 2155                   |
| EX1801                  | 101        | 47        | 23.0         | 2.2       | 6.5       | 2543                | 3042   | 1802    | 2722    | 2527                | -           | -           | 2297                   |
| EX1802                  | 96         | 46        | 21.0         | 1.5       | 11.2      | 2566                | 3480*  | 1418    | 2799    | 2703                | -           | -           | 2301                   |
| EX1803                  | 101        | -         | 22.0         | 2.5       | 26.8      | 2741                | 3198   | 2093    | 2997    | 2845                | -           | -           | 2631                   |
| EX1804                  | 97         | 48        | 22.0         | 2.5       | 2.5       | 2870                | 2497   | 1572    | 2752    | 2311                | -           | -           | 2266                   |
| EX1914                  | 101        | 47        | 21.0         | 3.0       | 11.9      | 2062                | 2761   | 1893    | 2922    | 2623                | -           | -           | 2072                   |
| N18103                  | 97         | 42        | 22.5         | 2.2       | 12.7      | 2731                | 2906   | 1359    | 3002    | 2500                | -           | -           | 2029                   |
| N19253                  | 100        | -         | 25.0         | 2.2       | 7.9       | 3346*               | 3292   | 2182    | 3143    | 2966*               | -           | -           | 2237                   |
| N19285                  | 102        | 44        | 22.0         | 2.9       | 7.2       | 2999                | 2206   | 2085    | 2968    | 2569                | -           | -           | 2104                   |
| SV1893GH                | 103        | 44        | 22.5         | 2.9       | 3.6       | 2889                | 3249   | 1552    | 3115    | 2701                | 2401        | -           | 2129                   |
| MEAN:                   | 100        | 45        | 22.9         | 2.6       | 11.3      | 2945                | 3112   | 2071    | 3068    | 2806                | 2725        | 2823        | 2229                   |
| LSD <sub>(0.05)</sub> : | -          | -         | -            | -         | NS        | 617                 | 621    | 556     | 399     | 395                 | 257         | 182         | -                      |
| CV:                     | -          | -         | -            | -         | -         | 17.8%               | 17.1%  | 22.9%   | 11.1%   | 23.8%               | 22.9%       | 19.2%       | -                      |

**TABLE 4. BLACK BEAN AGRONOMIC AND YIELD RESULTS.**

| VARIETY                 | White Mold |           |              |           |           |                     |        |         |         |                     |             |             | Seed Size              |
|-------------------------|------------|-----------|--------------|-----------|-----------|---------------------|--------|---------|---------|---------------------|-------------|-------------|------------------------|
|                         | Maturity   | Flowering | Plant Height | Lodging   | Infection | Bay                 | Huron  | Sanilac | Tuscola | 1-year avg.         | 2-year avg. | 3-year avg. |                        |
|                         | — dap —    | — dap —   | — inch —     | — (1-5) — | — % —     | Lb. A <sup>-1</sup> |        |         |         | Lb. A <sup>-1</sup> |             |             | seeds Lb <sup>-1</sup> |
| Adams                   | 101        | 44        | 22.0         | 2.7       | 7.4       | 3540                | 4663*  | 3099*   | 3300*   | 3521                | 3281*       | 3250        | 2066                   |
| Black Bear              | 103        | 47        | 20.5         | 2.9       | 3.9       | 3118                | 4016   | 2682    | 3078*   | 3223                | 2918        | 2875        | 2288                   |
| Black Beard             | 100        | 47        | 26.0         | 2.7       | 8.8       | 3684                | 4250   | 3156**  | 3142*   | 3558                | 3171*       | 3292*       | 1967                   |
| Black Tails             | 96         | 44        | 22.5         | 2.0       | 12.6      | 3398                | 3946   | 2374    | 2783    | 3125                | 2809        | 2887        | 2326                   |
| Eclipse                 | 95         | 44        | 19.0         | 1.5       | 10.2      | 3052                | 3726   | 1721    | 3245*   | 2986                | -           | -           | 2156                   |
| ND Twilight             | 94         | 45        | 20.5         | 1.5       | 17.5      | 2508                | 3695   | 1729    | 2836    | 2522                | -           | -           | 2022                   |
| Spectre                 | 101        | 45        | 23.5         | 2.6       | 4.6       | 3488                | 4849** | 2822*   | 3208*   | 3591*               | 3190*       | 3252        | 2032                   |
| Zenith                  | 101        | 46        | 22.0         | 2.4       | 7.0       | 3414                | 3795   | 2294    | 3002    | 3126                | 2832        | 2881        | 2034                   |
| Zorro                   | 100        | 45        | 22.5         | 2.5       | 5.3       | 3316                | 4023   | 2195    | 3125*   | 3093                | 2718        | 2771        | 2388                   |
| Zorro + Heads Up        | 100        | 45        | 22.0         | 2.5       | 4.9       | 3406                | 3867   | 2131    | 2734    | 3034                | -           | -           | 2421                   |
| 14500                   | 101        | 46        | 23.5         | 2.7       | 9.1       | 4253**              | 4574*  | 3039*   | 3444*   | 3827**              | 3435**      | 3461**      | 1915                   |
| 15610                   | 102        | 47        | 21.0         | 2.8       | 14.0      | 3222                | 4189   | 2843*   | 3490**  | 3435                | 3134        | 3072        | 2311                   |
| 15619                   | 103        | 45        | 21.5         | 3.0       | 7.0       | 3140                | 4653*  | 2698    | 3239*   | 3471                | 2996        | 2796        | 2123                   |
| 16590                   | 102        | 46        | 23.0         | 3.0       | 6.7       | 3077                | 3900   | 2484    | 3095*   | 3138                | -           | -           | 2005                   |
| 16648                   | 103        | 47        | 22.5         | 3.0       | 7.0       | 3053                | 3940   | 2454    | 3096*   | 3143                | -           | -           | 2036                   |
| 17704                   | 101        | 47        | 25.0         | 2.5       | 1.1       | 3069                | 3679   | 2138    | 2830    | 2973                | -           | -           | 2744                   |
| 17708                   | 97         | 44        | 23.0         | 2.5       | 11.2      | 3215                | 3564   | 1909    | 2887    | 2987                | -           | -           | 2125                   |
| 17715                   | 96         | 47        | 21.5         | 2.6       | 5.3       | 2850                | 4376*  | 2500    | 2725    | 3112                | -           | -           | 2370                   |
| 17724                   | 96         | 44        | 23.0         | 2.5       | 14.0      | 3475*               | 3718   | 2086    | 2992    | 3067                | -           | -           | 2476                   |
| 17751                   | 97         | 43        | 21.0         | 2.7       | 12.6      | 3747                | 4291   | 2652    | 3131*   | 3504                | -           | -           | 2059                   |
| B13SR1-1                | 100        | 44        | 22.0         | 1.5       | 10.5      | 2636                | 3289   | 2111    | 2738    | 2693                | 2567        | -           | 1982                   |
| B17220                  | 100        | 45        | 21.5         | 1.5       | 1.8       | 3222                | 4308   | 2273    | 2942    | 3193                | -           | -           | 2052                   |
| B17922                  | 99         | 46        | 20.5         | 1.5       | 7.7       | 2877                | 4523*  | 2069    | 2754    | 3083                | 2944        | -           | 2333                   |
| B18201                  | 98         | 46        | 22.0         | 2.0       | 6.0       | 2999                | 3820   | 2433    | 2848    | 3025                | 3163        | -           | 1985                   |
| B18204                  | 95         | 44        | 21.0         | 2.0       | 6.0       | 3116                | 4228   | 2059    | 2703    | 2958                | 2699        | -           | 1982                   |
| B19330                  | 96         | 45        | 20.0         | 2.0       | 10.9      | 3224                | 3896   | 2259    | 3126*   | 3170                | -           | -           | 2042                   |
| B19344                  | 100        | 45        | 23.5         | 2.5       | 4.6       | 3286                | 4447*  | 2245    | 3101*   | 3269                | -           | -           | 1860                   |
| B3036368                | 97         | 46        | 21.0         | 2.8       | 4.6       | 2646                | 4081   | 1744    | 3056*   | 2993                | -           | -           | 2205                   |
| B3036381                | 101        | 45        | 23.5         | 3.0       | 11.6      | 2649                | 4217   | 2578    | 2793    | 3059                | -           | -           | 2205                   |
| BL1402-15               | 98         | 43        | 21.5         | 2.5       | 7.7       | 2914                | 3890   | 2416    | 2865    | 3124                | -           | -           | 1989                   |
| MEAN:                   | 99         | 45        | 22.1         | 2.4       | 8.0       | 3186                | 4077   | 2369    | 3007    | 3165                | 2990        | 3052        | 2150                   |
| LSD <sub>(0.05)</sub> : | -          | -         | -            | -         | NS        | 556                 | 533    | 384     | 467     | 266                 | 272         | 187         | -                      |
| CV:                     | -          | -         | -            | -         | -         | 14.8%               | 11.1%  | 13.7%   | 13.2%   | 14.4%               | 22.1%       | 18.2%       | -                      |

**TABLE 5. SMALL RED AND PINK BEAN AGRONOMIC AND YIELD RESULTS.**

| VARIETY     | White Mold Infection |                      |                          |                      |                               |                     |       |         |         | 1-year avg. 2-year avg. 3-year avg. |             |             | Seed Size<br>seeds Lb <sup>-1</sup> |
|-------------|----------------------|----------------------|--------------------------|----------------------|-------------------------------|---------------------|-------|---------|---------|-------------------------------------|-------------|-------------|-------------------------------------|
|             | Maturity<br>— dap —  | Flowering<br>— dap — | Plant Height<br>— inch — | Lodging<br>— (1-5) — | White Mold Infection<br>— % — | Bay                 | Huron | Sanilac | Tuscola | 1-year avg.                         | 2-year avg. | 3-year avg. |                                     |
|             |                      |                      |                          |                      |                               | Lb. A <sup>-1</sup> |       |         |         | Lb. A <sup>-1</sup>                 |             |             |                                     |
| Caldera     | 99                   | 46                   | 26.5                     | 2.5                  | 23.7                          | 1946                | 2615  | 2255    | 3006    | 2700                                | 2685        | 2826        | 1356                                |
| Cayenne     | 98                   | 43                   | 22.5                     | 2.1                  | 10.3                          | 2318                | 2655  | 2484    | 3063    | 2630                                | 2645        | 2918*       | 1375                                |
| Ruby        | 99                   | 43                   | 23.0                     | 3.5                  | 35.6                          | 2098                | 2638  | 2414    | 3251    | 2600                                | 2496        | 2687        | 1594                                |
| Viper       | 100                  | 44                   | 23.0                     | 2.5                  | 26.0                          | 2314                | 3357  | 3069**  | 3747**  | 3145**                              | 3034**      | 3059**      | 1596                                |
| 16686       | 97                   | 44                   | 25.0                     | 2.5                  | 40.0                          | 1658                | 2675  | 2588    | 3688*   | 2652                                | 2494        | -           | 1323                                |
| 17835       | 100                  | 42                   | 23.5                     | 3.1                  | 19.6                          | 1428                | 2335  | 2004    | 2948    | 2085                                | 2430        | -           | 1259                                |
| 17837       | 100                  | 40                   | 22.0                     | 2.5                  | 25.2                          | 2185                | 2511  | 2619    | 3695*   | 2752                                | 2518        | -           | 1494                                |
| 17839       | 99                   | 39                   | 24.0                     | 2.6                  | 16.3                          | 2042                | 2617  | 2651*   | 3545*   | 2713                                | 2458        | -           | 1480                                |
| R17604      | 99                   | 44                   | 24.5                     | 2.0                  | 14.5                          | 1919                | 2946  | 2162    | 3421    | 2612                                | 2584        | -           | 1616                                |
| S18904      | 100                  | 43                   | 21.5                     | 2.2                  | 17.4                          | 2570                | 2190  | 2122    | 3128    | 2400                                | 2545        | -           | 1284                                |
| MEAN:       | 99                   | 43                   | 23.5                     | 2.5                  | 22.8                          | 2048                | 2653  | 2464    | 3349    | 2629                                | 2589        | 2872        | 1438                                |
| LSD (0.05): | -                    | -                    | -                        | -                    | NS                            | NS                  | NS    | 422     | 301     | 294                                 | 276         | 215         | -                                   |
| CV:         | -                    | -                    | -                        | -                    | -                             | -                   | -     | 14.6 %  | 7.5 %   | 26.7%                               | 25.0%       | 22.1%       | -                                   |

**TABLE 6. CRANBERRY BEAN AGRONOMIC AND YIELD RESULTS.**

| VARIETY      |                     |                      |                          | Montcalm Tuscola |         | Irrigated 2-year avg.   | Irrigated 3-year avg.   | Dry Land 2-year avg.    | Dry Land 3-year avg.    | Seed Size<br>seeds Lb <sup>-1</sup> |
|--------------|---------------------|----------------------|--------------------------|------------------|---------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------------------|
|              | Maturity<br>— dap — | Flowering<br>— dap — | Plant Height<br>— inch — | Montcalm         | Tuscola | — Lb. A <sup>-1</sup> — | — Lb. A <sup>-1</sup> — | — Lb. A <sup>-1</sup> — | — Lb. A <sup>-1</sup> — |                                     |
| Amaranto     | 92                  | 34                   | 16.0                     | 2881*            | 2340*   | 3425*                   | -                       | 1701*                   | -                       | 926                                 |
| Bellagio     | 100                 | 38                   | 21.0                     | 2356             | 2146*   | 2880                    | 3086                    | 1805*                   | 2495*                   | 819                                 |
| Chianti      | 100                 | 37                   | 18.0                     | 2353             | 1839    | 3307*                   | 3363*                   | 962                     | 2085                    | 992                                 |
| Etna         | 92                  | 35                   | 14.0                     | 3202*            | 2694*   | 3655**                  | 3412*                   | 1369                    | 2003                    | 881                                 |
| Red Cran 172 | 95                  | 35                   | 20.0                     | 1865             | 1919    | 2293                    | -                       | 1819*                   | -                       | 831                                 |
| Red Cran Up  | 96                  | 35                   | 14.0                     | 2240             | 1752    | -                       | -                       | -                       | -                       | 858                                 |
| Vero         | 90                  | 35                   | 18.0                     | 2642             | 2436*   | 3209                    | 3165*                   | -                       | -                       | 935                                 |
| 16758        | 90                  | 35                   | 14.0                     | 2967*            | 2185*   | -                       | -                       | -                       | -                       | 1158                                |
| 16759        | 95                  | 34                   | 18.0                     | 3182*            | -       | -                       | -                       | -                       | -                       | 790                                 |
| 16760        | 98                  | 34                   | 16.0                     | 3414**           | 2041*   | 3467*                   | 3446*                   | 1762*                   | 2459*                   | 931                                 |
| 16761        | 91                  | 34                   | 15.0                     | 2703             | 2021*   | 3135                    | 3277*                   | 1434                    | 2109                    | 897                                 |
| 16764        | 96                  | 35                   | 18.0                     | 3184*            | 2613*   | 3163                    | 2866                    | 1771*                   | 2403*                   | 863                                 |
| 16775        | 100                 | 38                   | 16.0                     | 2690             | 2725*   | 3086                    | -                       | 1677*                   | -                       | 915                                 |
| 16816        | 90                  | 33                   | 16.0                     | 2948*            | 2834**  | -                       | -                       | -                       | -                       | 955                                 |
| 151085       | 98                  | 36                   | 16.0                     | 2942*            | 2756*   | 3271*                   | 3506**                  | 2101**                  | 2522*                   | 796                                 |
| 151093       | 87                  | 35                   | 20.0                     | 2934*            | 2867*   | 3081                    | 3038                    | 1794*                   | 2741**                  | 887                                 |
| 14L1203B     | 95                  | 33                   | 18.0                     | 2788             | -       | -                       | -                       | -                       | -                       | 829                                 |
| 16756        | 98                  | 36                   | 20.0                     | 2428             | 2269*   | -                       | -                       | -                       | -                       | 947                                 |
| CR1704-2     | 95                  | 34                   | 16.0                     | 2398             | 1626    | -                       | -                       | -                       | -                       | 849                                 |
| MEAN:        | 95                  | 35                   | 17.1                     | 2748             | 2290    | 3244                    | 3229                    | 1651                    | 2352                    | 898                                 |
| LSD (0.05):  | -                   | -                    | -                        | 590              | 901     | 402                     | 375                     | 544                     | 347                     | -                                   |
| CV:          | -                   | -                    | -                        | 18.2 %           | 22.5    | 14.8%                   | 17.1%                   | 29.7%                   | 19.7%                   | -                                   |

## PRAB PRODUCTION PRACTICES SURVEY

(Please only one response per farm operation)

1. Open the camera on your smartphone
2. Hold it over the QR code below
3. Click on the link that appears at the top of the screen
4. Complete the survey on dry bean production practices and help direct future research!

**Thank you!**



**TABLE 7. LIGHT RED KIDNEY BEAN AGRONOMIC AND YIELD RESULTS.**

| <i>VARIETY</i>                | Maturity | Flowering | Plant Height | Montcalm                | Tuscola | Irrigated 2-<br>year avg. | Irrigated 3-<br>year avg. | Dry Land 2-<br>year avg. | Dry Land 3-<br>year avg. | Seed Size              |
|-------------------------------|----------|-----------|--------------|-------------------------|---------|---------------------------|---------------------------|--------------------------|--------------------------|------------------------|
|                               | — dap —  | — dap —   | — inch —     | — Lb. A <sup>-1</sup> — |         | — Lb. A <sup>-1</sup> —   |                           | — Lb. A <sup>-1</sup> —  |                          | seeds Lb <sup>-1</sup> |
| <i>Big Red</i>                | 92       | 37        | 14.0         | 2799                    | 2224    | 2974                      | 2932                      | 1968                     | 2041                     | 782                    |
| <i>California Early</i>       | 91       | 35        | 16.0         | 3355*                   | 2022    | 3500*                     | 3184*                     | 1575                     | 1851                     | 835                    |
| <i>Clouseau</i>               | 98       | 36        | 18.0         | 2805                    | 2138    | 3280*                     | 3322*                     | 1565                     | 1982                     | 793                    |
| <i>Coho</i>                   | 101      | 37        | 16.0         | 3026*                   | 2274    | 2861                      | 3297*                     | 2409*                    | 2409*                    | 1030                   |
| <i>Pink Panther</i>           | 98       | 36        | 16.0         | 3268*                   | 2427    | -                         | -                         | -                        | -                        | 802                    |
| <i>Red Dawn</i>               | 89       | 35        | 16.0         | 3565**                  | 2242    | 3612**                    | 3517*                     | 1712                     | 1945                     | 881                    |
| <i>Ronnie's Red</i>           | 104      | 35        | 24.0         | 2538                    | 2318    | 2676                      | 3275*                     | 2461**                   | 2603**                   | 752                    |
| <i>Rosie</i>                  | 104      | 37        | 20.0         | 1795                    | 2363    | -                         | -                         | -                        | -                        | 859                    |
| <i>15907</i>                  | 105      | 39        | 18.0         | 1881                    | 2017    | 2148                      | 2595                      | 2387*                    | 2514*                    | 786                    |
| <i>15926</i>                  | 107      | 38        | 20.0         | 1620                    | 1900    | 2077                      | 2634                      | 2014                     | 2230                     | 719                    |
| <i>K17703</i>                 | 103      | 37        | 16.0         | 2786                    | 2291    | 3072*                     | 3581**                    | 1991                     | 2338*                    | 816                    |
| <i>K17704</i>                 | 103      | 35        | 20.0         | 2400                    | 2214    | -                         | -                         | -                        | -                        | 844                    |
| <i>K19605</i>                 | 103      | 35        | 18.0         | 2164                    | 2517    | -                         | -                         | -                        | -                        | 768                    |
| <b>MEAN:</b>                  | 100      | 36        | 17.8         | 2637                    | 2235    | 2911                      | 3148                      | 2002                     | 2212                     | 820                    |
| <b>LSD<sub>(0.05)</sub> :</b> | -        | -         | -            | 572                     | NS      | 541                       | 529                       | 413                      | 318                      | -                      |
| <b>CV:</b>                    | -        | -         | -            | 18.3 %                  | -       | 22.2%                     | 24.7%                     | 22.9%                    | 19.3%                    | -                      |

**TABLE 8. DARK RED KIDNEY BEAN AGRONOMIC AND YIELD RESULTS.**

| <i>VARIETY</i>                | Maturity | Flowering | Plant Height | Montcalm                | Tuscola | Irrigated 2-<br>year avg. | Irrigated 3-<br>year avg. | Dry Land 2-<br>year avg. | Dry Land 3-<br>year avg. | Seed Size              |
|-------------------------------|----------|-----------|--------------|-------------------------|---------|---------------------------|---------------------------|--------------------------|--------------------------|------------------------|
|                               | — dap —  | — dap —   | — inch —     | — Lb. A <sup>-1</sup> — |         | — Lb. A <sup>-1</sup> —   |                           | — Lb. A <sup>-1</sup> —  |                          | seeds Lb <sup>-1</sup> |
| <i>Chaparral</i>              | 105      | 35        | 18.0         | 2193                    | 2296*   | 2415                      | 3044                      | 1803                     | 1989                     | 912                    |
| <i>Dynasty</i>                | 105      | 37        | 18.0         | 2855*                   | 2583*   | 3224*                     | 3596**                    | 2205                     | 2428*                    | 783                    |
| <i>Epic</i>                   | 102      | 37        | 20.0         | 2728                    | 2379*   | 2963                      | 2179                      | 2156                     | 2303                     | 776                    |
| <i>Montcalm</i>               | 103      | 36        | 18.0         | 2732                    | 2345*   | 3082*                     | 3368*                     | 1864                     | 1968                     | 815                    |
| <i>Rampart</i>                | 97       | 35        | 18.0         | 2640                    | 2445*   | 2766                      | 3079                      | 2114                     | 2281                     | 924                    |
| <i>Red Cedar</i>              | 96       | 37        | 16.0         | 3050*                   | 1032    | 2799                      | 3004                      | 1652                     | 1855                     | 896                    |
| <i>Red Rover</i>              | 96       | 34        | 20.0         | 2934*                   | 2278*   | 3250**                    | 3292*                     | 2158                     | 2201                     | 876                    |
| <i>Spire</i>                  | 106      | 36        | 20.0         | 1745                    | 2102*   | 2023                      | 2827                      | 1952                     | 2177                     | 838                    |
| <i>Talon</i>                  | 100      | 38        | 20.0         | 2664                    | 2368*   | -                         | -                         | -                        | -                        | 914                    |
| <i>15977</i>                  | 98       | 35        | 18.0         | 2957*                   | 2340*   | -                         | -                         | -                        | -                        | 829                    |
| <i>15978</i>                  | 103      | 38        | 20.0         | 2686                    | 2589*   | 2433                      | 3027                      | 2631**                   | 2619**                   | 848                    |
| <i>15981</i>                  | 103      | 38        | 20.0         | 1773                    | 1196    | 1936                      | -                         | 1508                     | -                        | 1124                   |
| <i>18991</i>                  | 104      | 38        | 18.0         | 1400                    | 2058    | -                         | -                         | -                        | -                        | 789                    |
| <i>151011</i>                 | 100      | 35        | 18.0         | 3190**                  | 2196*   | 3220*                     | 3410*                     | 2084                     | 2343                     | 986                    |
| <i>161156</i>                 | 96       | 35        | 16.0         | 3083*                   | 2734*   | -                         | -                         | -                        | -                        | 1017                   |
| <i>161164</i>                 | 103      | 37        | 18.0         | 2786*                   | 2745**  | -                         | -                         | -                        | -                        | 913                    |
| <i>181017</i>                 | 103      | 36        | 18.0         | 2596                    | 1874    | -                         | -                         | -                        | -                        | 830                    |
| <i>K16136</i>                 | 101      | 36        | 16.0         | 3066*                   | 2270*   | 3171                      | 3399*                     | 2042                     | 2301                     | 908                    |
| <i>K19111</i>                 | 102      | 40        | 20.0         | 2762*                   | 2103*   | -                         | -                         | -                        | -                        | 928                    |
| <b>MEAN:</b>                  | 101      | 36        | 18.4         | 2631                    | 2271    | 2758                      | 3202                      | 2048                     | 2224                     | 890                    |
| <b>LSD<sub>(0.05)</sub> :</b> | -        | -         | -            | 445                     | 650     | 390                       | 357                       | 354                      | 261                      | -                      |
| <b>CV:</b>                    | -        | -         | -            | 14.2 %                  | 17.0%   | 17.0%                     | 16.5%                     | 17.8%                    | 15.7%                    | -                      |

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**TABLE 9. WHITE KIDNEY BEAN AGRONOMIC AND YIELD RESULTS.**

| <i>VARIETY</i>               | <b>Maturity</b> | <b>Flowering</b> | <b>Plant Height</b> | <b>Montcalm</b>               | <b>Tuscola</b> | <b>Irrigated 2-<br/>year avg.</b> | <b>Irrigated 3-<br/>year avg.</b> | <b>Dry Land 2-<br/>year avg.</b> | <b>Dry Land 3-<br/>year avg.</b> | <b>Seed Size</b>             |
|------------------------------|-----------------|------------------|---------------------|-------------------------------|----------------|-----------------------------------|-----------------------------------|----------------------------------|----------------------------------|------------------------------|
|                              | - <i>dap</i> -  | - <i>dap</i> -   | - <i>inch</i> -     | — <i>Lb. A<sup>-1</sup></i> — |                | — <i>Lb. A<sup>-1</sup></i> —     |                                   | — <i>Lb. A<sup>-1</sup></i> —    |                                  | <i>seeds Lb<sup>-1</sup></i> |
| <i>Beluga</i>                | 104             | 41               | 20.0                | 2346                          | 2201           | 2803                              | 2760                              | 2171                             | 2343**                           | 841                          |
| <i>ND White Tail</i>         | 104             | 40               | 20.0                | 2849                          | 2109           | -                                 | -                                 | -                                | -                                | 922                          |
| <i>Yeti</i>                  | 106             | 39               | 18.0                | 1796                          | 2394           | 2790                              | 3145                              | 1970                             | 2224                             | 841                          |
| <i>K16924</i>                | 97              | 34               | 16.0                | 3546**                        | 2531           | 3638**                            | 3871**                            | 1950                             | 2201                             | 902                          |
| <i>K19830</i>                | 106             | 40               | 20.0                | 2942                          | 2336           | -                                 | -                                 | -                                | -                                | 795                          |
| <b>MEAN:</b>                 | 103             | 39               | 18.8                | 2695                          | 2272           | 3077                              | 3258                              | 2030                             | 2256                             | 860                          |
| <b>LSD<sub>(0.05)</sub>:</b> | -               | -                | -                   | 339                           | NS             | 491                               | 418                               | NS                               | 296                              | -                            |
| <b>CV:</b>                   | -               | -                | -                   | 9.3 %                         | -              | 18.1%                             | 18.3%                             | -                                | 16.9%                            | -                            |



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